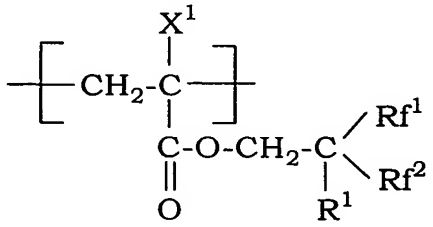
CLAIMS

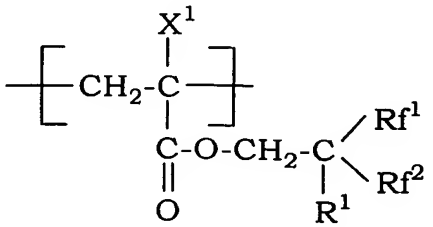
1. A fluorine-containing optical material which comprises a fluorine-containing copolymer comprising from 32 to 36 % by mole of a structural unit (a) represented by the formula (1):



(1)

wherein X^1 is H, CH_3, F, CF_3 or Cl; Rf^1 and Rf^2 are the same or different and each is a perfluoroalkyl group having 1 to 5 carbon atoms; R^1 is a hydrocarbon group having 1 to 5 carbon atoms which may be substituted with fluorine atom, and from 64 to 68 % by mole of a structural unit (b) derived from methyl methacrylate.

2. A fluorine-containing optical material which comprises a fluorine-containing copolymer comprising from 15 to 62 % by mole of a structural unit (a) represented by the formula (1):



(1)

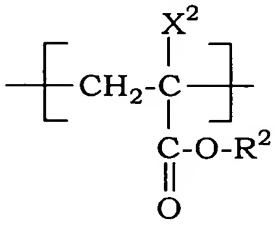
wherein X^1 is H, CH_3, F, CF_3 or Cl; Rf^1 and Rf^2 are the same or different

and each is a perfluoroalkyl group having 1 to 5 carbon atoms; R^1 is a hydrocarbon group having 1 to 5 carbon atoms which may be substituted with fluorine atom, from 12 to 70 % by mole of a structural unit (b) derived from methyl methacrylate and from 1 to 40 % by mole of a structural unit (c) (excluding the structural unit (a)) derived from a fluorine-containing monomer which is copolymerizable therewith.

3. The fluorine-containing optical material of Claim 1 or 2, wherein in the formula (1), X^1 is CH_3.

4. The fluorine-containing optical material of Claim 3, wherein the fluorine-containing copolymer comprises from 23 to 50 % by mole of the structural unit (a), from 33 to 70 % by mole of the structural unit (b) and from 1 to 40 % by mole of the structural unit (c).

5. The fluorine-containing optical material of any of Claims 2 to 4, wherein in the fluorine-containing copolymer, the structural unit (c) is a structural unit (c1) represented by the formula (2):



(2)

wherein X^2 is H, CH_3, F, CF_3 or Cl; R^2 is H or a fluoroalkyl group; the structural unit represented by the formula (1) is excluded, and when R^2 is H, X^2 is neither H nor CH_3.

6. The fluorine-containing optical material of Claim 5, wherein in the formula (2), R^2 is a fluoroalkyl group having 3 to 8 carbon atoms.

7. The fluorine-containing optical material of Claim 5 or 6, wherein the fluorine-containing copolymer comprises from 23 to 50 % by mole of the structural unit (a), from 33 to 70 % by mole of the structural unit (b) and from 1 to 40 % by mole of the structural unit (c1).

8. The fluorine-containing optical material of any of Claims 5 to 7, wherein in the fluorine-containing copolymer, the number of carbon atoms of R^2 in the formula (2) representing the structural unit (c1) is from 4 to 6.

9. The fluorine-containing optical material of Claim 8, wherein in the fluorine-containing copolymer, R^2 in the formula (2) representing the structural unit (c1) is represented by the formula (3):

$$-CH_2C_nF_{2n}H \qquad (3)$$

wherein n is an integer of from 3 to 5.

10. The fluorine-containing optical material of Claim 8, wherein in the fluorine-containing copolymer, R^2 in the formula (2) representing the structural unit (c1) is $-CH_2C_4F_8H$.

11. The fluorine-containing optical material of any of Claims

5 to 10, wherein in the fluorine-containing copolymer, X^2 in the formula (2) representing the structural unit (c1) is $-CH_3$.

12. The fluorine-containing optical material of any of Claims 1 to 11, which has a glass transition temperature of not less than 100°C, a refractive index of not more than 1.440 and a fluorine content of not less than 20 % by weight.

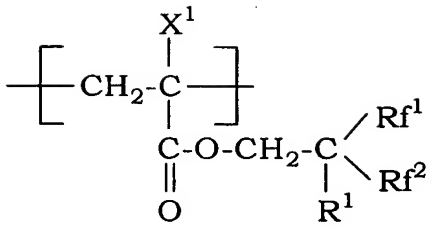
13. The fluorine-containing optical material of Claim 12, wherein the glass transition temperature is not less than 105°C.

14. The fluorine-containing optical material of Claim 12 or 13, wherein the refractive index is not more than 1.430.

15. The fluorine-containing optical material of any of Claims 12 to 14, wherein the fluorine content is not less than 30 % by weight.

16. A material for clad of optical fiber which is obtained from the fluorine-containing optical material of any of Claims 1 to 15.

17. A fluorine-containing copolymer which has a weight average molecular weight of from 10,000 to 1,000,000 and comprises from 32 to 36 % by mole of a structural unit (a) represented by the formula (1):

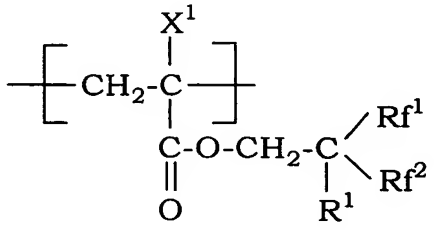


(1)

wherein X^1 is H, CH_3, F, CF_3 or Cl; Rf^1 and Rf^2 are the same or different and each is a perfluoroalkyl group having 1 to 5 carbon atoms; R^1 is a hydrocarbon group having 1 to 5 carbon atoms which may be substituted with fluorine atom, and from 64 to 68 % by mole of a structural unit (b) derived from methyl methacrylate.

18. The fluorine-containing copolymer of Claim 17, wherein in the formula (1), X^1 is CH_3.

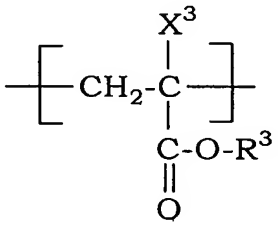
19. A fluorine-containing copolymer which has a weight average molecular weight of from 10,000 to 1,000,000 and comprises from 15 to 62 % by mole of a structural unit (a) represented by the formula (1) :



(1)

wherein X^1 is H, CH_3, F, CF_3 or Cl; Rf^1 and Rf^2 are the same or different and each is a perfluoroalkyl group having 1 to 5 carbon atoms; R^1 is a hydrocarbon group having 1 to 5 carbon atoms which may be

substituted with fluorine atom, from 12 to 70 % by mole of a structural unit (b) derived from methyl methacrylate and from 1 to 40 % by mole of a structural unit (c2) represented by the formula (2a):



(2a)

wherein X^3 is H, CH_3, F, CF_3 or Cl; R^3 is H or a fluoroalkyl group; the structural unit represented by the formula (1) is excluded, and when R^3 is H, X^3 is neither H nor CH_3.

20. The fluorine-containing copolymer of Claim 19, wherein in the formula (1), X^1 is CH_3.

21. The fluorine-containing copolymer of Claim 19 or 20, which comprises from 23 to 50 % by mole of the structural unit (a), from 33 to 70 % by mole of the structural unit (b) and from 1 to 40 % by mole of the structural unit (c2).

22. The fluorine-containing copolymer of any of Claims 19 to 21, wherein the number of carbon atoms of R^3 in the formula (2a) representing the structural unit (c2) is from 4 to 6.

23. The fluorine-containing copolymer of Claim 22, wherein R^3 in the formula (2a) representing the structural unit (c2) is represented

by the formula (3):

$$-CH_2C_nF_{2n}H \qquad (3)$$

wherein n is an integer of from 3 to 5.

24. The fluorine-containing copolymer of Claim 22, wherein R^3 in the formula (2a) representing the structural unit (c2) is $-CH_2C_4F_8H$.

25. The fluorine-containing copolymer of any of Claims 19 to 24, wherein X^3 in the formula (2a) representing the structural unit (c2) is $-CH_3$.